4.3.5.4.2 *Site Infrastructure*

The representative evolutionary LWR sites would require an infrastructure similar to that described in Section 2.4.5.4 for large or small evolutionary LWRs. The length of the Pu disposition campaign and reactor capacities will determine the number of reactors required. At a specific site, existing infrastructure such as roads, railroads, and power line rights-of-way would determine additional requirements for connectivity. Site characteristics such as the availability of water and its bearing on reactor cooling, would also affect site infrastructure.

Changes to the existing infrastructure at representative sites due to the construction and operation of an evolutionary LWR are presented in Tables 4.3.5.4.2–1, 4.3.5.4.2–2, and 4.3.5.4.2–3. The site infrastructure changes associated with locating a single large or small evolutionary LWR at a DOE site follow.

Hanford Site

Electrical, fuel, and water requirements for construction would represent a small percentage of site usage. Transmission lines would be constructed and upgraded for the increased and redistributed electrical load. Additional primary and secondary access roads as well as railroad right-of-way would be required. The requirements can be accommodated with minimal site impact over the 6-year construction period. Operational electrical requirements increase significantly, but are within the capacity of the sub-regional power pool. New and upgraded transmission lines would be put in place for the increased and redistributed electrical load as part of the construction phase. Fuel requirements would not exceed current site availability. Required primary and secondary access roads and railroad right-of-way would be available. Facility requirements can be accommodated without significant site impact.

Nevada Test Site

Electrical requirements for construction would double the projected site usage. Transmission lines would be constructed and upgraded for the increased and redistributed electrical load. Increased fuel requirements can be easily met. Additional fuel required for construction could easily be obtained through contractual means. Additional primary and secondary access roads would also be required. The shipment of large and outsize components would pose a significant problem because of the lack of railroad service. Construction requirements, unique in some cases, can be accommodated over the 6-year construction period. Operational electrical requirements increase significantly over site availability, but are within the capacity of the sub-regional power pool. New and upgraded transmission lines would be put in place for the increased and redistributed electrical load as part of the construction phase. Fuel oil requirements would exceed current site availability, but can be accommodated through normal contractual means. Required primary and secondary access roads would be available. There would not be railroad service available.

Idaho National Engineering Laboratory

Electrical requirements for construction would not exceed site availability. [Text deleted.] Additional primary and secondary access roads as well as railroad right-of-way would be required. These requirements can be accommodated with moderate site impact over the 6-year construction period. Operational electrical requirements increase over site availability, but are within the capacity of the sub-regional power pool. New and upgraded transmission lines would be put in place for the increased and redistributed electrical load as part of the construction phase. Required primary and secondary access roads and railroad rights-of-way would be available.

Table 4.3.5.4.2–1. Additional Site Infrastructure Needed for the Construction of the Large or Small Evolutionary Light Water Reactor (Annual)

	Electrical		Fuel		
	Energy (MWh/yr)	Peak Load (MWe)	Oil (l/yr)	Natural Gas (m^3/yr)	Coal (t/yr)
Facility Requirements	20,000	20	946,000	0	0
Hanford Site					
Site availability	1,678,700	281	14,775,000	21,039,531	91,708
Projected usage without facility	345,500	58	9,334,800	21,039,531	0
Projected usage with facility	365,500	78	10,280,800	21,039,531	0
Amount required in excess to site availability	0	0	0	0	0
Nevada Test Site					
Site availability	176,844	45	5,716,000	0	0
Projected usage without facility	124,940	25	5,716,000	0	0
Projected usage with facility	144,940	45	6,662,000	0	0
Amount required in excess to site availability	0	0	946,000[a]	0	0
Idaho National Engineering Laboratory					
Site availability	394,200	124	16,000,000	0	11,340
Projected usage without facility	232,500	42	5,820,000	0	11,340
Projected usage with facility	252,500	62	6,776,000	0	11,340
Amount required in excess to site availability	0	0	0	0	0
Pantex Plant					
Site availability	201,480	23	1,775,720	289,000,000	0
Projected usage without facility	46,266	10	795,166	7,200,000	0
Projected usage with facility	66,266	30	1,741,166	7,200,000	0
Amount required in excess to site availability	0	7	0	0	0
Oak Ridge Reservation					
Site availability	13,880,000	2,100	416,000	250,760,000	16,300
Projected usage without facility	726,000	110	379,000	95,000,000	16,300
Projected usage with facility	746,000	130	1,325,000	95,000,000	16,300
Amount required in excess to site availability	0	0	909,000[a]	0	0
Savannah River Site					
Site availability	1,672,000	330	28,390,500	0	244,000
Projected usage without facility	794,000	116	28,390,500	0	221,352
Projected usage with facility	814,000	136	29,336,500	0	221,352
Amount required in excess to site availability	0	0	946,000[a]	0	0

[a] Fuel oil requirements in excess to site availability could be procured through normal contractual means.

Source: HF 1995a:1; INEL 1995a:1; LLNL 1996g; NTS 1993a:4; OR LMES 1995e; PX 1995a:1; SRS 1995a:2.

Table 4.3.5.4.2–2. Additional Site Infrastructure Needed for the Operation of the Large Evolutionary Light Water Reactor (Annual)

	Transportation		Electrical		Fuel		
	Roads (km)	Rail-roads (km)	Energy (MWh/yr)	Peak Load (MWe)	Oil (l/yr)	Natural Gas (m^3/yr)	Coal (t/yr)
Facility Requirements	< 5	< 5	1,100,000	140	757,000	0	0
Hanford Site							
Site availability	420	204	1,678,700	281	14,775,000	21,039,531	91,708
Projected usage without facility	420	204	345,500	58	9,334,800	21,039,531	0
Projected usage with facility	425	209	1,445,500	198	10,091,800	21,039,531	0
Amount required in excess to site availability	< 5	< 5	0	0	0	0	0
Nevada Test Site							
Site availability	1,100[a]	0	176,844	45	5,716,000	0	0
Projected usage without facility	645	0	124,940	25	5,716,000	0	0
Projected usage with facility	650	0	1,224,940	165	6,473,000	0	0
Amount required in excess to site availability	<5	0	1,048,096	120	757,000[b]	0	0
Idaho National Engineering Laboratory							
Site availability	445	48	394,200	124	16,000,000	0	11,340
Projected usage without facility	445	48	232,500	42	5,820,000	0	11,340
Projected usage with facility	450	53	1,332,500	182	6,577,000	0	11,340
Amount required in excess to site availability	< 5	< 5	938,300	58	0	0	0
Pantex Plant							
Site availability	76	27	201,480	23	1,775,720	289,000,000	0
Projected usage without facility	76	27	46,266	10	795,166	7,200,000	0
Projected usage with facility	81	32	1,146,266	150	1,552,166	7,200,000	0
Amount required in excess to site availability	< 5	< 5	944,786	127	0	0	0
Oak Ridge Reservation							
Site availability	71	27	13,880,000	2,100	416,000	250,760,000	16,300
Projected usage without facility	71	27	726,000	110	379,000	95,000,000	16,300
Projected usage with facility	76	32	1,826,000	250	1,136,000	95,000,000	16,300
Amount required in excess to site availability	< 5	< 5	0	0	720,000[b]	0	0
Savannah River Site							
Site availability	230	103	1,672,000	330	28,390,500	0	244,000
Projected usage without facility	230	103	794,000	116	28,390,500	0	221,352
Projected usage with facility	235	108	1,894,000	256	29,147,500	0	221,352
Amount required in excess to site availability	< 5	< 5	222,000	0	757,000[b]	0	0

[a] Includes paved and unpaved roads.

[b] Fuel oil requirements in excess to site availability could be procured through normal contractual means.

Source: HF 1995a:1; INEL 1995a:1; LLNL 1996g; NTS 1993a:4; OR LMES 1995e; PX 1995a:1; SRS 1995a:2.

Table 4.3.5.4.2–3. Additional Site Infrastructure Needed for the Operation of the Small Evolutionary Light Water Reactor (Annual)

	Transportation		Electrical		Fuel		
	Roads (km)	Rail-roads (km)	Energy (MWh/yr)	Peak Load (MWe)	Oil (l/yr)	Natural Gas (m^3/yr)	Coal (t/yr)
Facility Requirements	< 5	< 5	580,000	75	416,000	0	0
Hanford Site							
Site availability	420	204	1,678,700	281	14,775,000	21,039,531	91,708
Projected usage without facility	420	204	345,500	58	9,334,800	21,039,531	0
Projected usage with facility	425	209	925,500	133	9,750,800	21,039,531	0
Amount required in excess to site availability	< 5	< 5	0	0	0	0	0
Nevada Test Site							
Site availability	1,100[a]	0	176,844	45	5,716,000	0	0
Projected usage without facility	645	0	124,940	25	5,716,000	0	0
Projected usage with facility	650	0	704,940	100	6,132,000	0	0
Amount required in excess to site availability	0	0	528,096	55	416,000[b]	0	0
Idaho National Engineering Laboratory							
Site availability	445	48	394,200	124	16,000,000	0	11,340
Projected usage without facility	445	48	232,500	42	5,820,000	0	11,340
Projected usage with facility	450	53	812,500	117	6,236,000	0	11,340
Amount required in excess to site availability	< 5	< 5	418,300	0	0	0	0
Pantex Plant							
Site availability	76	27	201,480	23	1,775,720	289,000,000	0
Projected usage without facility	76	27	46,266	10	795,166	7,200,000	0
Projected usage with facility	81	32	626,266	85	1,211,166	7,200,000	0
Amount required in excess to site availability	< 5	< 5	424,786	62	0	0	0
Oak Ridge Reservation							
Site availability	71	27	13,880,000	2,100	416,000	250,760,000	16,330
Projected usage without facility	71	27	726,000	110	379,000	95,000,000	16,330
Projected usage with facility	76	32	1,306,000	185	795,000	95,000,000	16,330
Amount required in excess to site availability	< 5	< 5	0	0	379,000[b]	0	0
Savannah River Site							
Site availability	230	103	1,672,000	330	28,390,500	0	244,000
Projected usage without facility	230	103	794,000	116	28,390,500	0	221,352
Projected usage with facility	235	108	1,374,000	191	28,806,500	0	221,352
Amount required in excess to site availability	< 5	< 5	0	0	416,000[b]	0	0

[a] Includes paved and unpaved roads.

[b] Fuel oil requirements in excess to site availability could be procured through normal contractual means.

Source: HF 1995a:1; INEL 1995a:1; LLNL 1996g; NTS 1993a:4; OR LMES 1995e; PX 1995a:1; SRS 1995a:2.

Pantex Plant

Electrical requirements for construction would require transmission lines to be constructed and upgraded for the increased and redistributed electrical load. Additional primary and secondary access roads as well as railroad right-of-way would be needed. These requirements can be accommodated with minimal site impact over the 6-year construction period. Electrical requirements for operations increase over site availability, but are within the capacity of the sub-regional power pool. New and upgraded transmission lines would be put in place for the increased and redistributed electrical load as part of the construction phase. [Text deleted.] Required primary and secondary access roads and railroad right-of-way would be available.

Oak Ridge Reservation

[Text deleted.] Additional oil would be required during the period of construction and during operations. Since oil availability is governed by usage and not by storage capacity onsite, the additional oil required could be procured through normal contracts or the construction companies could provide for this additional oil from local suppliers from construction use. Required primary and secondary access roads and railroad rights-of-way would be available.

Savannah River Site

Fuel oil requirements for construction would represent a small percentage of site usage. [Text deleted.] Additional primary and secondary access roads as well as railroad rights-of-way would be required. These added requirements can be accommodated with minimal site impact over the 6-year construction period. Electrical requirements for large LWR, but not small LWR, operations would increase over site availability, but are within the capacity of the sub-regional power pool. New and upgraded transmission lines would be put in place for the increased and redistributed electrical load as part of the construction phase. Fuel oil requirements would exceed current site availability, but can be accommodated through normal contractual means. Required primary and secondary access roads and railroad rights-of-way would be available. Facility requirements could be accommodated without site impact.